

[▲ Home](#)[◀ Contents](#)**Bioarts, Bioterror and the CAE: Resurgences in Authoritarianism and Molecular Creativity***by Chris Babin*

New technologies have always inspired new directions in the arts and vice versa. Some 3,500 years ago, high levels of technical expertise and social organization enabled the Chinese of the Shang dynasty to create 2 ton bronze masterpieces. Hundreds of workers labored in unison to perfect the casting and design techniques that still astound people today (Franklin, 1996, p. 21). Much later, in Europe, the works of "Durer, Lineaus and Audobon" (Davis, 1996) were directly responsible for great leaps in the biological sciences. Their highly accurate illustrations have served to educate generations of professionals in the biological sciences. Perhaps more than any other creator, Leonardo Davinci's trans-disciplinary forays still resonate strongly right across the sciences and the arts. Skipping ahead once more, advances in the understanding of optics greatly influenced the impressionist movement just as the advent of photography inspired new directions for the painted arts. (Cohen, 2002) Now, the arts are again poised to play a fundamental role in the direction of scientific research and discovery.

This paper will discuss what has been called the bioart revolution. We will explore some of the common themes and major exhibits of this movement leading us to consider the role of the amateur or outsider engaging in science. We will then close with the case of Steven Kurtz, an artist currently facing 20 years in jail and a quarter of a million dollars in fines for some of his recent works. The prosecution of Kurtz highlights the very real dangers of posing a critical voice in these times of preemptive information collection, management and neutralization.

A brief history of the genetic arts

For the purposes of this paper, I cite the University of California's definition of bio-, trans- and genetic art as:

"art that reflects on the process, meaning, and ramifications of genetic research [and] artistic practices that use genetics as metaphor and/or creative substrate". (West)

While the selective breeding of plants and animals for aesthetic and practical purposes has existed for ages, it was not until the beginning of the 20th century that plants were exhibited as actual art pieces. Due to concerns surrounding eugenics following WW 2, Edward Steichen's exhibition of hybrid Delphiniums at The Museum of Modern Art in 1936 has been, until recently, the only exhibit at a major North American gallery to pose a live organism as art. (Gessert, 2004) The discovery of restriction enzymes in the 1970s however, sparked a revolution in genetics, directly

leading to a host of rapid advances (Cohen, 2002). Today, widespread access to new technologies in the biological sciences and recent advances in transgenic processes has spurred a worldwide merging of the arts and sciences.

Joe Davis' **Microvenus**, conceived in 1985, is credited as being the first transgenic art-piece. Hoping to aid in the search for extraterrestrial life, Davis encoded the Germanic rune symbol for female directly into the DNA of living bacteria (Davis, 1996). With the assistance of NASA, his unique organisms would function as "biological spacecraft" (Nadis, 1997) to be sent off into the cosmos. Indeed, once unleashed, the, "Microvenus icon, together with the essential hereditary information it is attached to, may survive for a period that is considerably longer than the projected lifespan of humanity itself" (Davis, 1996). In creating Microvenus, Davis protests the censored images of the male and female on the Voyager message plaque. Davis bemoans the

"fashionably groomed [figures] ... according to the western "taste", [that] completely disregard the existence of facial and body hair and the female, but not the male, genitalia ... [this] has described the facts of human intolerance ... [t]he Microvenus graphic was created because it is an important part of what has been left out of previous messages." (Davis, 1996)

By moving away from a Eurocentric perspective, Davis hopes to more aptly describe the true potential diversity of humanity to an extraterrestrial intelligence that "will require both physiological and psychological parity" (Davis, 1996) with humanity to even adequately process the communications efforts.

This proposal, outlandish when first created, has gained appeal over time and the use of bioagents as carriers of information is now a burgeoning research area. Microvenus could well serve as a biological complement to SETI and other exploratory space programmes illustrating just how the perspectives of an outsider can create undreamed of possibilities in the realm of technologies and their applications.

A prominent theme in the genetic arts is the adoption of aspects of performance art, especially audience participation. Eduardo Kac's **Genesis** enabled the audience to use the Internet to actually control the evolution of life.

Kac used Morse code to embed a Biblical passage into genes, which were then inserted into strands of bacteria. The passage quoted was:

"Let man have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moves upon the earth." (Linch, 2001)

An image of the altered organisms was then projected onto the wall of the gallery and broadcast over the Internet. A click of the mouse

allowed the audience to trigger an ultraviolet light, causing mutations in the bacteria". (Cohen, 2002)

Kac summarized just one of the implications of the Genesis exhibit; "the metaphor of art imitating life doesn't apply anymore. This is a situation where art is creating life" (Cohen, 202).

The collaborations of the SymbioticA Arts Group have been just as remarkable. Their projects, especially **Fish and Chips**, question the boundaries of sentience and challenge the conceptual boundaries that separate animal from machine.

Fish and Chips is a "semi-living artistic entity from distributed colonies of isolated neurons grown over custom made silicon chips fitted with an array of microelectrodes ... [this project will] evolve and create visual and audio artistic outcomes ... to explore the notions of creativity and the nature of art." (SymbioticA Arts Group, 2004)

This combination of hardware, software and wetware is connected by the Internet and processes sensory input to create art pieces using a robotic arm. Boasting a brain, body and nervous system in different locations that has the potential to learn, grow and create, Fish and Chips embodies the

"combined elements of unpredictability and temperament with the ability to learn and adapt ... an artistic entity that is both dependent, and independent, from its creator and its creator's intentions" (SymbioticA Arts Group, Current Status of ... , 2004).

After hearing an overview of just three examples of the genetic art pieces, we might well be left with the question, "why?"

Eduardo Kac, creator of the Genesis project, provides an answer with this simple question, "if artists ignore these issues ... if we don't take charge and use these technological media to raise questions about contemporary life, who is going to do that"? (Andrews, 2001)

This question, among many, many others has been raised in discussion of the bioarts. Insofar as the genetic arts are concerned, this paper poses two questions:

- Does the very presence of the genetic arts undermine critical discussion of related issues?
AND
- Do the genetic arts help to cultivate a broader knowledge of the ethical issues related to biotechnology?

While central to the thrust of this paper, these questions are fundamental elements of an ongoing dialogue that will not be concluded within these pages. Regardless, continue to consider these questions while scanning the works of one group in particular, the Critical Arts Ensemble and the trials of one of their founding members, Professor

Steven Kurtz.

For almost twenty years, The Creative Arts Ensemble, or CAE, has been examining how the creation and distribution of emerging technologies affects social and economic relations. In their own words, the CAE is "a collective of five artists of various specializations dedicated to exploring the intersections between art, technology, radical politics, and critical theory". (CAE FAQ, 2004)

The collaborative **Child as Audience** project of 2001 was designed with adolescent males in mind and featured a multimedia kit containing "a host of radical software, instructions on how to hack a Game boy, a hard core CD, and a pamphlet on the oppression of youth"(CAE, Child as ... , 2001). It was, in other words, a manual or roadmap to the edges of culture.

Other projects, such as their **Useless Technology** exhibit, have focused on "technology so pure that its only function is to exist". (CAE, Useless ... ,1994) For this exhibit, the CAE created a pseudo-catalogue featuring some of the latest techno commodities. In marketing the battery-powered Panasonic Nose Hair Trimmer beside the Pershing 2 Missile Guidance System complete with hyperbolic sales pitch, the CAE critiques concepts of innovation and desire in a society caught in the grip of total technofetishization. With humour, this exhibit shows how the objects that dominate today's headlines quickly become yesterday's historical quirks.

Over time, the CAE's multi-disciplinary approach to political art and technology ran, quite naturally, into the genetic arts. CAE works in this area seek to demystify the scientific processes involved in genetic engineering (CAE FAQ, 2004) by creating pieces that allow the public to gain an introduction to biotechnology. This approach differs substantially from most of the pieces classed as bioart in that the CAE actively attempt to involve the public in the learning process. Whereas a great number of bioart pieces do little to enhance public understanding of biotechnology and related issues, (and may actually enhance public misunderstanding and confusion), the CAE produces works that can be viewed as more process and education than art. In some instances, audiences are able to literally walk through and become part of a variety of stages in the genetic engineering process. As with all of their exhibits, position papers and explanations are readily available and the processes and decisions behind the technology being explored are crucial to each project. It is, of course, a valuable exercise to question why the works of the CAE have come under so much more scrutiny from law enforcement than the works of bioartists in general. A clue to this might rest in the CAE's continuing resolve to expose all aspects of the processes that lurk behind the implementation of these new technologies.

The **Contestational Biology** installation challenged the idea of the irreversible nature of bioengineering and "attempt[ed] to reverse-engineer genetically modified canola, corn, and soy plants through the use of nontoxic chemical disruptors". (CAE , Contestational... , 2002). A fully-functioning biolab visited a variety of public spaces. This lab was engaged

in eliminating the presence of the RoundUp Ready genes using current breeding techniques. Members of the public were invited to walk through the lab, view the equipment and plants, survey literature on the subject and engage in conversation with the lab technicians. This of course, eventually resulted in a cease and desist letter from Monsanto - which was never pursued (Soar, 2004). For the CAE, the creation of open labs for the public is crucial as they seek to break down the knowledge barriers that the public faces when encountering new technologies.

In 2004, the group was preparing a "home DNA extraction machine" (CAE FAQ, 2004) for an exhibit entitled **Free Range Grain**. Members of the public would have been allowed to bring in food that they suspected was genetically altered. Using the portable DNA extraction machine, they would be able to subject the food to testing which could indicate the presence of genetic modification. Due to a truly tragic set of circumstances, this exhibit is now in the hands of the authorities.

Early in the morning of May 11th 2004, CAE member Steve Kurtz awoke to find that his wife and fellow CAE collaborator, Hope, had died during the night¹. Mr. Kurtz called 911 and the team of paramedics, noticing his homemade lab, notified the FBI. Upon arrival, the FBI conducted lengthy interrogations of Kurtz, sealing his home, and confiscating his wife's body, research materials, his car and his cat while they investigated possible biocontamination. Kurtz was illegally detained at a local hotel and for 22 hours was not allowed to go anywhere or speak with anyone without the presence of the FBI.

It did not take long for the autopsy to determine that Hope had died of natural causes. It also did not take long to determine that the bacteria stored in the Kurtz home was also virtually harmless. The bacteria in question is actually commonly used by high school students in science class.

Supporters had hoped that once the authorities had a chance to review Dr. Kurtz's contributions to the arts and his unblemished academic record, as well as the nature of the bacteria in question, that any further investigations would cease.

Nothing could be further from the truth.

Kurtz's associates, students and fellow members of the collective began to receive subpoenas to appear before a Grand Jury in regards to possible bioterror violations of the PATRIOT Act. In a situation right out a Kafka story, people summoned to appear before the Grand Jury had no way of preparing for their interviews as the specifics of the line of questions to be posed are not revealed and attorneys are not allowed.

Many people suspect that, because the investigation was not dropped as the facts around Kurtz's case were revealed, there must have been some kind of political motivation behind the charges. Special Agent Paul Moskal of the FBI relieved critics by saying "[w]e don't know anything about an art project ... That's not something that concerns the FBI nor

should it". (Lewis, Germs, 2004)

Fair enough. Nonetheless, the investigation continued.

On June 29th of last year it appeared as though the investigation into Mr. Kurtz had been completed. The Grand Jury appeared to have ceased pursuing possible bioterror violations of the US bio weapons act. However, the Grand Jury instead, "handed down indictments of 2 counts each of "mail fraud" and "wire fraud".(CAE, FBI ... ,2004) These charges carry with them penalties of up to 20 years in jail and fines of \$250, 000. Also indicted on the same charges was Professor Robert Ferrell of the University of Pittsburgh. These charges concern technicalities of how Kurtz and Ferrell allegedly obtained the bacteria Kurtz was using in his art work.

The case against professors Kurtz and Ferrell supposedly rests upon the accusation of fraud. Ferrell allegedly broke a Material Transfer Agreement or MTA, by supplying bacteria to Dr. Kurtz. Part of the MTA stated that all bacteria purchased by the University of Pittsburgh had to remain on the university's property to be used by university staff only. Because Kurtz did not have the required lab approvals, he approached his colleague for assistance in obtaining the bacteria. The bacteria in question, *Serratia marcescens* and *Bacillus atrophaeus* are relatively harmless (CAE, FBI ... ,2004), requiring the lowest biosafety rating for handling and are not illegal to possess. There are, in fact, no federal guidelines whatsoever, prohibiting the possession of these materials.

The value of the bacteria is \$256 and ATCC has yet to raise a complaint against Kurtz. All of the materials that have been confiscated were absolutely legal for any citizen of the United States to own. In fact, this case appears to fall well outside of the FBI's own guidelines for prosecutorial actions. The Department of Justice web site, in listing potential causes for investigation states;

"Prosecutions of fraud ordinarily should not be undertaken if the scheme employed consists of some isolated transactions between individuals, involving minor loss to the victims, in which case the parties should be left to settle their differences by civil or criminal litigation in the state courts. Serious consideration, however, should be given to the prosecution of any scheme which in its nature is directed to defrauding a class of persons, or the general public, with a substantial pattern of conduct". (DOJ, 2004)

In explaining the logic behind the investigation, Assistant US Attorney William Hochul Jr. has stated, "these two guys ordered material pretending it was for the University of Pittsburgh, when it wasn't" (Lewis, From Baghdad ..., 2004).

Fair enough. However, many supporters of Kurtz claim that a disproportionate amount of federal resources have been devoted to what amounts to a minor infraction.

Kurtz's lawyer, Paul Cambria, has stated that, "ATCC's (the company that originally supplied the bacteria) 'material transfer agreement' is at best a civil contract ... Let ATCC sue them for violating their terms of sale. But they'd have to sue literally thousands of people, because thousands of people obtain this material and share it with other scientists" (Lewis, From Baghdad ..., 2004).

We might wonder whether the application of federal resources to cases involving MTA's common and whether the methods Kurtz used to obtain the bacteria are also widely-used or whether this was an uncommon practice among researchers signaling sinister or criminal intent.

A supporter of Kurtz, Natalie Jeremijenko, stated that "sharing is the basis of academic collaboration ... they're going to have to indict the entire scientific community". (Lewis, From Baghdad ..., 2004) Is this at all accurate? Sharing Scientific Resources: Genetically Altered Mice, by the NRC comments on this very topic,

"The sharing of laboratory resources ... has long been common among scientists studying the genetics of organisms. It provides two essential ingredients for the proper functioning of the scientific method: an opportunity for scientists to develop a line of research and a means for others to verify the results. (National Research Council, p.1,1994)"

The authors of this publication do mention that "the tradition of sharing is not universal" (National Research Council, p.4,1994) and that financial pressures are negatively affecting the tendency for researchers to engage in collaboration. However, they also point out that sharing has made possible many important advances such as the discovery of penicillin. (National Research Council, p.3,1994)

At a recent hearing in federal court over motions to dismiss the case, prosecuting Attorney, Mr. Hochul was asked by Judge Schroeder if the same level of attention would be paid to similar infractions committed by other members of the public, say, in the case of a minor using the Internet to acquire alcohol across state lines. Mr. Hochul replied in the affirmative, signaling that, according to his understanding, federal law enforcement agencies would be ready to pursue minors using the internet to purchase alcohol with the same enthusiasm. (CAE, Judge Hears ... , 2005)

Whether that will occur or not remains to be seen. In fact, Claire Pentecost asserts that this may be the very first time that "the U.S. justice department is intervening in the breach of an MTA of nonhazardous materials in order to redefine it as a criminal offense" (Pentecost, Reflections ..., 2005)

We are then left to consider, whether the investigation of Kurtz and Ferrell, now resulting in millions of dollars in costs, is really an impartial application of resources or whether this actually is, as some have characterized, "the new McCarthyism" (Liese, 2004) and an attempt to

chill critical voices in science and the arts.

While prosecutors maintain that the investigation is not politically motivated in any way, shape or form, Julie Perini, a former student of Kurtz wrote about her experiences in front of the Grand Jury and Mr. Hochul;

"He seemed to want me to articulate, under oath, what Professor Kurtz's politics were" and she was also asked to confirm, under oath, if she had described Kurtz in previous FBI interviews as a "leftist". (Perini, 2004)

What is it about Kurtz's works that has so attracted the attention of the administration? "Kurtz's materials are politically, not physically, dangerous" (Ferris, 2004) stated University of Washington geneticist, Mary-Claire King. The CAE's works in educating the public around the biotech industry and the real dangers posed by bioterrorism may have struck too close to the bone for some. Leading up to his encounter with the authorities, Kurtz had been working on a book "to assess the actual danger these weapons pose and to bring U.S. policy on such threats into public dialogue". (Pentecost, Reflections ..., 2005) In criticizing anti-bioterrorism programmes, Kurtz was more than likely drawing attention to several areas:

- "exaggeration, in order to support military programs and national security-state agendas, of the threat of use and the consequences of use by terrorists of chemical, and biological weapons;
- Diversion of resources from other, much more urgently needed, public health services;
- Use of ineffective or potentially dangerous preventive measures;
- The risks of commingling public health programs with military, intelligence, and law enforcement programs" (Sidel, Gould & Cohen, 2004)

Scientists and artists from around the world have voiced their support of Kurtz's right to create art and publish texts that extend enquiry into these areas. A number of supporting organizations and individuals are also drawing parallels between the current flow of "billions of dollars accruing to unproven, high-tech responses [for a] threat of chemical and bioterrorism [that] has been greatly exaggerated" and the lobbying and profiteering that influenced the American "defensive programs against nuclear weapons" (Sidel, Gould & Cohen, 2004) during the cold war. In an age of information warfare, Kurtz believes that his confiscated computer, texts and research materials, all of which hold a great deal of work on this subject, will not be returned. (CAE, FBI ..., 2004)

While prosecutors maintain that there are no underlying motivations for continuing the investigation of Kurtz, the unique application of millions of dollars in resources for a \$256 transaction which has not been disputed raises serious questions about the logic behind this prosecution. Whether the actions against Kurtz are impartial or not, a growing number of people are noting the course of the prosecution and it is making people wary.

When government agencies apply laws in a manner that appear to be vindictive or less than impartial to silence their own citizens, the government risks losing the fundamental role that creativity and criticism plays in any large group success. Sunstein states, organizations and "nations are more likely to prosper if they welcome dissent and promote openness. Well-functioning societies benefit from a wide range of views ... [and] take steps to discourage conformity and to promote dissent". (Sunstein, 212-13, 2003)

The active and independent functioning of critical and exploratory perspectives in the arts and sciences is crucial to fostering democracy. The following statement, composed in support of Kurtz, holds true in times of peace and should be regarded even more highly in times of conflict;

Art and science are forms of human enquiry that can be illuminating and controversial, and the freedom of both must be preserved as part of a healthy democracy - - as must a sense of proportion" (Nature, 2004).

In characterizing this issue as one of freedom of speech, sympathizers point to the potential effects on both the artistic and scientific community. Joe Davis was recently quoted as saying, "[i]t's really going to have a chilling impact on the type of work people are going to do in this arena, and other arenas as well"(Coyne, 2004). Scientists, artists and practioners of the genetic arts everywhere understand the need for safe and responsible use of their materials but when the very act of communication becomes crime, how secure have we truly become?

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Endnotes

1. All background information pertaining to the events of and subsequent to May 11, 2004 can be accessed on the CAE web site: <www.caedefensefund.org/background.html>

Chris Babin is an ESL instructor and student advisor at Seneca College. He is a writer of fiction, places, people and situations stranger than fiction. He can be contacted at chris.babin@senecac.on.ca.

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